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CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
04/09/2006	

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Washington Administrative Code (WAC) 173-303-650(11), *Surface impoundments* and WAC 173-303-665(9), *Landfills* require a Response Action Plan (RAP) that describes the actions to be taken if the action leakage rate (ALR) has been exceeded. This appendix includes a response plan for the landfill and the Leachate Collection System (LCS).

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~~4C~~ 4CA FACILITY RESPONSE ACTION PLAN

~~4C.1.~~ 4CA.1 Leakage Response Action Plan

WAC 173-303-665(9) regulations require the owner of the operator of a landfill unit to have an approved RAP before receipt of waste. The RAP is a site-specific plan that establishes actions to be taken if leakage through the upper (primary) lining system of a landfill exceeds a certain rate. The intent of the RAP is to assure that any leachate that leaks through the primary lining system will not migrate out of the landfill into the environment.

A key element of the RAP is the ALR, a threshold value which triggers the responses described in the RAP, but below which no special actions are required. Because landfill liner systems have not yet been perfected, a small amount of leakage through the primary liner generally occurs, despite the use of best available materials, construction techniques, and quality assurance procedures. (This leakage is collected by the LDS system and removed from the landfill.) Hence, the ALR is set at some level higher than normally expected leakage rates to serve as an indicator that the primary lining system is not functioning as expected. Exceeding the ALR may reflect serious failure of the primary lining system and indicates the need for investigation and possibly corrective action while the problem is still manageable.

This RAP has been prepared in accordance with requirements of WAC 173-303-665(9). The requirements for determining the ALR are contained in WAC 173-303-665(8) and the Environmental Protection Agency (EPA) guidance document, *Action Leakage Rates for Leak Detection Systems* (EPA 530-R-92-004).

The following sections establish the ALR and discuss response actions to be taken if the ALR is exceeded.

~~4C.1.1.~~ 4CA.1.1 Action Leakage Rate

Section 5.11 provides a detailed discussion of the analysis to determine the ALR into the LDS for the Integrated Disposal Facility (IDF). Based on this analysies, the ALR for the IDF permitted cell is 206 gallons per acre per day, or approximately 1,800 gallons per day per cell (each cell area is approximately 8.5 acres). This value includes a factor of safety of 2 in accordance with EPA guidelines (57 Federal Register [FR] 19). It is also much lower than the LDS pump capacity. Details of the calculation are presented in Appendix C.10.

In accordance with WAC 173-303-665(8)(b), the flow rate used to determine if the ALR has been exceeded will be calculated as the average daily flow rate into the sump, expressed as gallons per acre per day (unless Washington State Department of Ecology [Ecology] approves a different calculation). This calculation will be performed on a weekly basis during the active (operational) life of the landfill, and monthly after the landfill has been closed. Post-closure frequency may be reduced if only minimal amounts of leachate accumulate in the leak detection system sump. As outlined in WAC 173-303-665(4)(c)(ii), during post-closure monitoring, if the liquid level in the LDS sump stays below the pump operating level for two consecutive months, monitoring of the amount of liquid in the LDS sumps can be reduced to at least quarterly. If the liquid level in the LDS sump stays below the pump operating level for two consecutive quarters, monitoring of the amount of liquid in the LDS sumps can be reduced to at least semiannually. Pump operating level is defined as a liquid level approved by Ecology, based on pump activation level, sump dimensions, and level that minimizes head in the sump.

~~4C.1.2.~~ 4CA.1.2 Response Actions

WAC 173-303-665(9) lists several required actions if the ALR is exceeded. In the event that the ALR is exceeded, the United States Department of Energy (DOE) will:

- Notify Ecology in writing of the exceedance within 7 days of the determination.

- Submit a preliminary written assessment to Ecology within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, cause of any leaks, and short-term actions taken and planned.
- Determine, to the extent practicable, the location, size, and cause of any leak.
- Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed.
- Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks.
- Within 30 days after the notification that the ALR has been exceeded, submit to Ecology the results of the analyses specified in bullets 3, 4, and 5 of this section, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the ALR, the owner or operator must submit to the regional administrator a report summarizing the results of any remedial actions taken and actions planned.

If the ALR is exceeded, DOE will submit the required notifications to Ecology, as stated above. The EPA will also receive copies of this confirmation.

The leachate will be analyzed for Resource Conservation and Recovery Act (RCRA) constituents. If the analytical results indicate that these constituents are present, and if the constituents can be traced to a particular type of waste stored in a known area of the landfill, then it may be possible to estimate the location of the leak. However, because the waste will meet land disposal restrictions, it will contain no free liquids and will be stabilized or solidified, except as allowed by Appendix 3A, Section 1.2. In addition, the canister(s) or other type of waste package(s) may not undergo enough deterioration during the active life of the landfill to permit escape of its contents. For these reasons, it is possible that the leachate may be clean or the composition too general to indicate a specific source location.

If the source location cannot be identified, large-scale removal of the waste and operations layer to find and repair the leaking area of the liner would be one option for remediation. However, this procedure risks damaging the liner. In addition, waste would have to be handled, stored, and replaced in the landfill. Backfill would need to be removed from around the waste packages to accomplish this. If the waste packages are damaged during this process, the risk of accidental release may be high. For these reasons, large scale removal of waste and liner system materials is not considered a desirable option and will not be implemented except as a last resort.

The preferred options for remediation include covers and changes in landfill operating procedures. The preferred alternative will depend on factors such as the amount of waste already in the landfill, the rate of waste receipt, the chemistry of the leachate, the availability of other RCRA-compliant disposal facilities, and similar considerations. Hence, at this time no single approach can be selected. If the ALR is exceeded, potential options will be evaluated prior to selecting a remediation process. If necessary, an interim solution will be implemented while the evaluation and permanent remediation is performed. Examples of potential approaches include the following:

- The surface of the intermediate soil cover over the waste could be graded to direct runoff into a shallow pond. The surface would then be covered with a discardable, temporary geomembrane (e.g., 30-mil PVC or reinforced polypropylene). Precipitation water would be pumped or evaporated from the pond and would not infiltrate the waste already in the landfill. Waste packages would be placed only during periods of dry weather and stored temporarily at other times. This type of approach would also be used, if necessary, to reduce leakage during the time immediately after the ALR was exceeded, while other remediation options were being evaluated.
- If the landfill was nearly full, partial construction of the final closure cover might be an option. This would reduce infiltration into the landfill and possibly the leakage rate, if the cover was constructed over the failed area.

- A layer of low-permeability soil could be placed over the existing waste, perhaps in conjunction with a geomembrane, to create a second "primary" liner higher in the landfill. This new liner would intercept precipitation and allow its removal.
- A rigid-frame or air-supported structure could be constructed over the landfill to ensure that no infiltration occurred. Although costly, this approach might be less expensive than constructing a new landfill.

In general, the selected remediation efforts would be those that are easiest to implement, with more difficult or expensive options to be applied only if earlier approaches were not satisfactory.

~~4C.2.~~ 4CA.2 References

EPA 530-R-92-004, *Action Leakage Rates for Leak Detection Systems*, U.S. Environmental Protection Agency, Office of Solid Waste Management, Washington, D.C., January 29, 1992.

57 FR 19, *Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units*, U.S. Environmental Protection Agency, January 1992.

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INTEGRATED DISPOSAL FACILITY
ATTACHMENT B
FACILITY RESPONSE ACTION PLAN FOR THE LEACHATE COLLECTION SYSTEM

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ATTACHMENT B
FACILITY RESPONSE ACTION PLAN FOR THE LEACHATE COLLECTION SYSTEM

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4CB FACILITY RESPONSE ACTION PLAN

4CB.1 Leakage Response Action Plan for Leachate Collection Units

The IDF LCS dangerous waste management unit (DWMU) is a miscellaneous unit consisting of two leachate collection units (LCUs) and associated ancillary equipment. The liners of these two LCUs are managed in accordance with WAC 173-303-650, *Surface impoundments*. WAC 173-303-650(11) regulations require the owner or operator of a surface impoundment unit to have an approved RAP before receipt of waste. The RAP is a site-specific plan that establishes actions to be taken if the surface impoundment ALR has been exceeded. The intent of the RAP for the IDF LCUs is to assure that any leachate that leaks through the primary lining system into the leak detections system will not exceed a depth of 0.3 m (1 ft) on the bottom liner.

A key element of the RAP is the ALR, a threshold value which triggers the response described in the RAP, but below which no special actions are required. Leakage that occurs through the primary liner is collected through the LCU leak detection system, which includes the combined sump. Hence, the ALR is set at some level higher than normally expected leakage rate to serve as an indicator that the primary liner system is not functioning as expected. Exceeding the ALR may reflect serious failure of the primary lining system and indicates the need for investigation and possibly corrective action while the problem is still manageable.

This RAP has been prepared in accordance with the EPA guidance document, ALRs for Leak Detection Systems (EPA 530-R-92-004) and the requirements of WAC 173-303-650(11). The requirements for determining the ALR are contained in WAC 173-303-650(10).

The following sections establish the ALR and discuss response actions to be taken if the ALR is exceeded.

4CB.1.1 Action Leakage Rate

The LCU ALR was developed in accordance with WAC 173-303-650(10). The ALR for a surface impoundment is the maximum design flow rate that the leak detection system can remove without the fluid head on the bottom liner exceeding 1 foot. In the IDF LCUs it is assumed that the 1 foot of head will extend into the primary liner through the potential leak source (liner penetration or defect). Based on this analysis, the ALR for each IDF LCU is 579 gallons per acre per day. This value takes into account multiple reduction factors that may reduce the transmissivity of the composite drainage net (IDF-00015). It is also much lower than the LCU combined sump pump capacity.

In accordance with WAC 173-303-650(10)(b), the flow rate used to determine if the ALR has been exceeded will be calculated as the average daily flow rate into the combined sump from the LCU leak detection piping, expressed as gallons per acre per day. This calculation will be performed on a weekly basis during the active (operational) life of the LCU.

4CB.1.2 Response Actions

WAC 173-303-650(11) lists several required actions if the ALR is exceeded. In the event that the ALR is exceeded, the Permittees will:

- Notify Ecology in writing of the exceedance within 7 days of the determination.
- Submit a preliminary written assessment to Ecology within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, cause of any leaks, and short-term actions taken and planned.
- Determine, to the extent practicable, the location, size, and cause of any leak.
- Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed.

- Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks.
- Within 30 days after the notification that the ALR has been exceeded, submit to Ecology the results of the analyses specified in bullets (b) (iii), (iv), and (v) of WAC 173-303-650(11), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the ALR, the owner or operator must submit to the regional administrator a report summarizing the results of any remedial actions taken and actions planned.

If the ALR is exceeded, DOE will submit the required notifications to Ecology, as stated above. The EPA will also receive copies of this confirmation.

To make the leak and/or remediation determinations outlined in WAC 173-303-650(11)(b)(iii), (iv), and (v), the Permittees will:

- Assess the source of leachate and amount of leachate by source;
- Conduct an analysis of the leachate and possible location of any leaks, and the hazard and mobility of the leachate; and
- Assess the seriousness of any leaks in terms of potential for escaping into the environment; or
- Document why such assessments are not needed.

If the source location cannot be identified or the damage in the liner is unrepairable, the large-scale removal and replacement of the primary liner is a viable remediation option. If the ALR is exceeded, potential options will be evaluated prior to selecting a remediation process. If necessary, an interim solution will be implemented while the evaluation and permanent remediation is performed. An example of a potential approach is to prevent leachate from entering the leaking LCU by diverting the leachate from the source disposal cell to the alternate LCU through the leachate transfer pipeline.

4CB.2 References

57 FR 19, *Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units*, U.S. Environmental Protection Agency, January 1992.

EPA 530-R-92-004, *Action Leakage Rates for Leak Detection Systems*, U.S. Environmental Protection Agency, Office of Solid Waste Management, Washington, D.C., January 29, 1992.

IDF-00015, 2021, *Integrated Disposal Facility Action Leakage Rate for the Leachate Storage Tanks*, Central Plateau Cleanup Company, Richland, Washington.

WAC 173-303, *Dangerous Waste Regulations*, Washington Administrative Code, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303.

303-650, *Surface impoundments*.